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Comparative Analysis Between John Onimisi Obidi's Theory of Entropicity (ToE) and Waldemar Marek Feldt's FELDT–HIGGS Universal Bridge (F–HUB) Theory

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ABSTRACT

In the unfolding landscape of twenty-first century theoretical physics, the pursuit of a unified description of nature remains among the most profound challenges. This paper presents a detailed comparative analysis between two emerging frameworks—**John Onimisi Obidi's Theory of Entropicity (ToE)** and **Waldemar Marek Feldt's FELDT–HIGGS Universal Bridge (F–HUB) Theory**—each of which offers a novel reinterpretation of mass, gravity, entropy, and information.

The **Theory of Entropicity (ToE)** establishes entropy not as a statistical by-product of disorder but as the fundamental field and causal substrate of physical reality. It reconstructs gravitation, time, and quantum behavior from the dynamics of an entropy field governed by the Obidi Action and the Vuli-Ndlela Integral. Conversely, the **FELDT–HIGGS Universal Bridge (F–HUB)** formulates an informational architecture of the universe in which mass and spacetime emerge from quantum information structuring mediated by the Higgs field. Its central relation, the *F–HUB Master Equation*, integrates thermodynamic constants to link information, mass, and entropy within a unified algebraic framework.

This study systematically compares the philosophical premises, mathematical foundations, and physical implications of both theories. It further examines whether F–HUB's informational emergence model can be interpreted as a subset or limiting case of ToE's entropic dynamics. By contrasting the causality orders—*F–HUB: Information → Entropy → Mass → Gravity → Spacetime* and *ToE: Entropy → Information → Mass → Motion → Spacetime*—the paper argues that ToE provides a deeper, first-principles formulation of physical law in which entropy is the generative field underlying information and structure. Both frameworks together signal a paradigm shift toward post-Einsteinian physics grounded not in geometry, but in informational–entropic causation.

KEYWORDS:
Entropy field theory, Entropicity, FELDT–HIGGS, Higgs mechanism, Information physics, Obidi Ac-tion, Post-Einsteinian unification, Quantum gravity, Thermodynamics of spacetime, Vuli-Ndlela Integral

[†]Further resources on the Theory of Entropicity (ToE) are available at: https://theoryofentropicity.blogspot.com

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1 Introduction

For more than a century, physics has sought a single unifying principle capable of connecting the thermodynamic, relativistic, and quantum domains into one coherent description of nature. Einstein's general relativity endowed spacetime with geometry but left the origins of entropy, information, and quantization unexplained. Quantum mechanics, for its part, provided predictive precision but relied on statistical postulates detached from physical cause. In recent decades, researchers such as Bekenstein, Hawking, Jacobson, Padmanabhan, and Verlinde have revealed that gravitational dynamics themselves may be emergent from thermodynamic or informational principles. Yet despite these advances, no single theory has managed to express both the *geometric* and *informational* dimensions of reality as one continuous field.

Two contemporary approaches have recently revived this ambition from opposite directions. The first, **John Onimisi Obidi's Theory of Entropicity (ToE)**,[(2; 3; 4; 5; 6; 7; 9; 10)] reconstructs all of physics from the principle that entropy is not a derivative quantity but the foundational causal field of the universe. The second, **Waldemar Marek Feldt's FELDT–HIGGS Universal Bridge (F–HUB)**,[(1)] grounds reality in quantum information dynamics structured through the Higgs field. Both frameworks extend beyond Einsteinian geometry and the Standard Model, yet they diverge in their definitions of what is truly fundamental: ToE begins from *entropy*, whereas F–HUB begins from *information*.

This section introduces the conceptual foundations of each theory and establishes the interpretive bridge through which they will be compared. The comparison highlights how ToE transforms entropy into a dynamical, variational field while F–HUB treats entropy as a derivative of informational geometry and Higgs interaction. Understanding these distinctions clarifies why ToE's equations assume the form of nonlinear field dynamics rather than algebraic correspondences.

2 Conceptual Framework

2.1 The Philosophical Divergence

Both ToE and F–HUB are post-Einsteinian theories in that they treat space, time, and mass not as primitives but as emergent manifestations of deeper organizing principles. Yet they differ profoundly in the order of emergence.

F–HUB Causal Order	Information → Entropy → Mass → Gravity → Spacetime
ToE Causal Order	Entropy → Information → Mass → Motion → Spacetime

In **F–HUB**, the universe originates as a structured information network. Entropy appears as the measure of information dispersion, and the Higgs field mediates the crystallization of informational patterns into mass and geometry. In contrast, the **Theory of Entropicity** reverses this hierarchy: the entropic field precedes information itself. Entropy is not a measure of information but the process by which information—and thus reality—comes into being. This inversion of causality represents one of ToE's defining departures from all previous frameworks.

2.2 Foundational Principles

The essential philosophical premises of the two theories are summarized in Table 1. They reveal how both share thermodynamic ancestry but assign different ontological primacy to entropy and information.

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Table 1: Foundational Premises of F–HUB and ToE

Aspect	F–HUB Theory	Theory of Entropicity (ToE)
First Principle	The universe is an information structure organized through the Higgs field; physical phenomena arise from informational symmetry breaking.	The universe is an entropic continuum; all physical processes arise from gradients and fluxes in the entropy field.
Primary Quantity	Information density and its coupling to the Higgs potential.	Entropy $S(x)$ as a continuous scalar–tensor field with intrinsic dynamics.
Causality Basis	Information → structure → energy → geometry.	Entropy → information → energy → geometry.
Temporal Interpretation	Time is the sequential reconfiguration of informational states.	Time is irreversible entropic flow (*Chronos*) giving direction to existence.
Nature of Mass	Mass emerges from informational resonance with the Higgs field.	Mass is frozen or constrained entropy—the localized resistance of the field to further redistribution.
Nature of Gravity	Entropic effect of information curvature mediated by the Higgs interaction.	Entropy gradient seeking equilibrium; gravity is entropy's curvature in motion.
Goal of Theory	To construct a universal algebraic bridge between information, mass, and spacetime geometry.	To derive all physical laws from the Obidi Action and Vuli-Ndlela Integral as expressions of entropy's causal field.

2.3 Conceptual Integration

At a philosophical level, both theories attempt to bridge physics and metaphysics: F–HUB through *informational causation*, ToE through *entropic generation*. The F–HUB model situates the Higgs field as the translator between quantum information and matter, suggesting that the universe's "hardware" is informational. ToE instead interprets the same phenomena as the "software" of entropy in continuous operation. In F–HUB, the universe *stores* information; in ToE, the universe *learns* through entropy.

These complementary but distinct perspectives imply that ToE encompasses F–HUB as a special case—specifically, the regime where entropy flow stabilizes into steady informational patterns. When entropy ceases to evolve dynamically, its residual configuration behaves as information geometry—the very domain F–HUB describes. Thus, ToE may be seen as a generalization of F–HUB, extending informational physics into a full field theory of entropy.

2.4 Transition to Mathematical Framework

While F–HUB expresses its insights through algebraic proportionalities and phenomenological relations among constants, ToE formalizes them via a variational action principle called the **Obidi Action**. The next section develops the mathematical structures underlying each approach, beginning with the F–HUB master relation and proceeding to the Obidi Action[(2; 4)] and Vuli-Ndlela Integral.[(2; 3; 4; 8; 9)] This transition marks the boundary between descriptive correspondences and generative dynamics—the distinction that ultimately defines the greater unifying power of the Theory of Entropicity.

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3.1 The F–HUB Mathematical Model

The **FELDT–HIGGS Universal Bridge (F–HUB)** treats the universe as a structured informational network whose physical manifestations emerge through the coupling of information density to the Higgs field. Its key quantitative relation, termed the *F–HUB Master Equation*, links entropy S, the Higgs contribution H', mass M, Boltzmann's constant k_B, and the speed of light c. This relation expresses the algebraic proportionality between entropy and the informational curvature induced by the Higgs interaction:

$$S = \frac{H' M^2 k_B \alpha}{c^3} \tag{1}$$

where α is a coupling constant representing the proportional intensity of the informational curvature of spacetime.

Equation (1) encapsulates the F–HUB principle that mass is a function of informational structure and that entropy quantifies the information embodied in mass-energy configurations. The framework is primarily algebraic rather than differential: it does not yield field dynamics but provides proportional laws between thermodynamic and informational quantities. Each variable symbolizes a structural aspect of reality:

- H' — effective Higgs amplitude, determining how information condenses into mass,
- M — inertial manifestation of stored information,
- k_B — thermodynamic scaling between information and energy,
- c — propagation constant linking informational updates to physical causality.

Thus, F–HUB translates informational organization into measurable thermodynamic properties, but it remains descriptive. The equation defines a steady-state relation without prescribing how information or entropy evolve dynamically over time.

3.2 The Theory of Entropicity (ToE) Field Formulation

The **Theory of Entropicity (ToE)**, by contrast, constructs a complete field-theoretic and variational formulation of physics grounded in entropy as a causal entity. At the foundation of ToE lies the **Obidi Action**, which generalizes classical and quantum actions by introducing explicit entropy-dependent terms. The path integral of the theory, known as the **Vuli-Ndlela Integral**, governs the probabilistic weighting of all entropic field configurations:

$$Z_{\mathrm{ToE}} = \int_{\mathbb{S}} \mathcal{D}[\phi]\, \exp\left[\frac{i}{\hbar} S[\phi]\right] \exp\left[-\frac{\mathcal{S}_G[\phi]}{k_B}\right] \exp\left[-\frac{\mathcal{S}_{\mathrm{irr}}[\phi]}{\hbar_{\mathrm{eff}}}\right] \tag{2}$$

where:

- $S[\phi]$ is the classical action (e.g., Einstein–Hilbert or Standard Model action),
- $S_G[\phi]$ represents the gravitational entropy correction,
- $S_{\mathrm{irr}}[\phi]$ accounts for irreversible entropy flow,
- $\hbar_{\mathrm{eff}}$ is the entropy-modified Planck constant,
- $\mathbb{S}$ is the entropy-constrained domain restricting allowable field configurations.

Equation (2) formalizes the entropic field dynamics of ToE: physical evolution corresponds to the path that extremizes the total entropic action. Entropy here is not an external measure but a dynamical variable generating spacetime geometry, motion, and energy flow. The effective field equations follow from a variation of the Obidi Action:

$$\frac{\delta}{\delta\phi}\left(S[\phi] - i\frac{\hbar}{k_B}\mathcal{S}_G[\phi] - i\frac{\hbar}{\hbar_{\mathrm{eff}}}\mathcal{S}_{\mathrm{irr}}[\phi]\right) = 0 \tag{3}$$

which yields a generalized Euler–Lagrange structure incorporating both reversible and irreversible components of entropy flow.

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3.3 Comparative Mathematical Structure

The essential mathematical distinction between F–HUB and ToE can be summarized in Table 2. While F–HUB provides a phenomenological bridge linking constants of nature, ToE produces a dynamical field theory governed by variational extremization and entropy constraints.

Table 2: Comparison of Mathematical Structures in F–HUB and ToE

Feature	F–HUB Theory	Theory of Entropicity (ToE)
Mathematical Form	Algebraic master equation linking thermodynamic and informational quantities.	Variational field equations derived from an entropy-dependent action principle.
Core Relation	$S = (H'M^2 k_B \alpha)/c^3$	$Z_{\mathrm{ToE}} = \int D[\phi]\, e^{iS/\hbar} e^{-S_G/k_B} e^{-S_{\mathrm{irr}}/\hbar_{\mathrm{eff}}}$
Primary Variable	Scalar mass–entropy proportionality.	Entropy field $S(x)$ and its derivatives $\partial_\mu S$.
Nature of Equations	Static proportionalities among constants.	Dynamic, nonlinear partial differential equations with irreversibility.
Dimensional Basis	0-dimensional algebraic manifold (information geometry).	4-dimensional entropic manifold (space-time field).
Underlying Principle	Information–Higgs coupling.	Entropic extremization (second law as field equation).
Analytical Technique	Symbolic substitution and dimensional balance.	Variational calculus and path integral quantization.

3.4 Interpretative Comparison

From an analytical perspective, the F–HUB equation (1) defines an equilibrium constraint—an informational equation of state connecting the Higgs field and entropy content of matter. In contrast, ToE's formulation (2) describes non-equilibrium dynamics: the spontaneous, time-asymmetric evolution of entropy fields seeking maximal flow. This difference in mathematical architecture corresponds to a difference in metaphysical stance.

In F–HUB, reality is fundamentally informational; physics describes how information structures stabilize into recognizable phenomena. In ToE, reality is fundamentally entropic; physics describes how entropy continuously reconfigures information and energy to sustain existence. Where F–HUB presents a snapshot of cosmic structure, ToE offers its movie.

3.5 Bridge Between F–HUB and ToE

Although distinct in approach, the two theories are mathematically compatible under specific limits. When ToE's irreversible term $S_{\mathrm{irr}}[\phi]$ approaches zero and the entropy field becomes stationary ($\partial_\mu S \to 0$), the action reduces to a quasi-static state corresponding to F–HUB's algebraic regime. In that limit, entropy ceases to generate new structure and behaves as stored information—precisely the condition F–HUB models.

Therefore, F–HUB emerges as the *informational equilibrium limit* of ToE's entropic dynamics. This hierarchical relationship is illustrated conceptually in Figure 1.

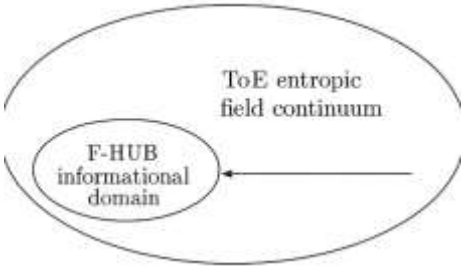

Figure 1: Conceptual relationship between the F–HUB informational domain and the ToE entropic field continuum. The former appears as the static equilibrium subset of the latter's dynamic field manifold.

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3.6 Summary of the Comparative Framework

The mathematical contrast between the two frameworks underscores their complementary natures. The F–HUB theory contributes an intuitive algebraic linkage between mass, information, and entropy, while the Theory of Entropicity generalizes this intuition into a dynamical principle capable of reproducing relativistic, quantum, and thermodynamic phenomena from a single source. F–HUB offers *correspondence*, ToE delivers *causation*.

In the next section, the discussion proceeds to the physical and conceptual consequences of these mathematical formulations—specifically, how each theory interprets gravity, mass, time, and the emergence of physical law.

4 Physical Implications and Comparative Consequences

4.1 Mass and the Nature of Matter

In **F–HUB**, mass arises from the informational resonance of quantum states with the Higgs field. When information organizes into stable configurations, the Higgs interaction endows it with rest energy, giving rise to inertial mass. Thus, mass represents the structural condensation of information.

In the **Theory of Entropicity (ToE)**, the story is inverted. Mass does not emerge from informational structure but from *constrained entropy*. Wherever entropy flow is inhibited or stored, a local curvature in the entropic field manifests as what we measure as mass. Matter is, therefore, not substance but a frozen configuration of entropy:

$$M \propto \frac{\partial S}{\partial x^{\mu}} \to 0 \tag{4}$$

This relation implies that mass is the local boundary condition where the spatial derivative of the entropy field approaches zero—entropy trapped rather than free. Hence:

Mass = localized entropic constraint, Gravity = entropy attempting to restore flow.

This description transforms mass from a passive quantity to an active participant in the universe's entropic self-balancing.

4.2 Gravitation as Entropic Curvature

In F–HUB, gravity results from the curvature of the informational field mediated by the Higgs potential, a derivative effect of how information structures space. The ToE, however, introduces a deeper interpretation: gravity is the *curvature of entropy flow* itself. Space curves not because of energy or mass [alone], but because entropy redistributes dynamically to maximize its flow potential. The Einstein tensor is replaced by an *Entropic Curvature Tensor* $\Lambda_{\mu\nu}$, representing entropy gradients within the field:

$$\Lambda_{\mu\nu} = \eta \, \nabla_{\mu}\nabla_{\nu}S - g_{\mu\nu}\Box S \tag{5}$$

where η is the entropic coupling constant. Equation (5) ensures that what appears as gravitational attraction in general relativity is, in ToE, the spatial redistribution of the entropy field seeking equilibrium.

4.3 The Speed of Light as the Entropic Limit

A central philosophical and physical divergence arises in the interpretation of the speed of light. In standard physics and in F–HUB, c is a fundamental constant linking energy, information, and geometry. In the Theory of Entropicity, c is redefined as the maximum velocity of entropy reconfiguration—the ultimate rate at which the universe can reorganize information, energy, and structure. Hence, the constancy of the speed of light reflects the universal constraint on entropic computation:

$$c = \max\left(\frac{dS}{dt}\right)_{\text{field}} \tag{6}$$

Relativity emerges naturally as an *entropic phenomenon*: as an object approaches this limit, the required entropy for further acceleration increases, manifesting as mass increase, time dilation, and length contraction. Thus, the entropic field forbids superluminal motion not arbitrarily but because the universe cannot update its own entropic configuration faster than c.

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4.4 Time as Irreversible Entropic Flow (ToE's Chronos)

Both theories attempt to redefine the meaning of time, yet they do so in opposite directions. F–HUB defines time as the sequence of information updates in the universal network—a discrete informational clock. ToE treats time as a continuous, irreversible flow of entropy. Each moment corresponds to the system's new entropic configuration, making time inseparable from thermodynamic evolution:

$$\frac{dS}{dt} > 0 \quad \Rightarrow \quad t \text{ flows forward.} \tag{7}$$

The arrow of time thus emerges as an inherent property of entropy itself, not as an imposed asymmetry. This insight links ToE to both cosmological expansion and quantum measurement, where the collapse of the wavefunction corresponds to the irreversibility of entropy exchange between observer and system.[(2; 3; 9)]

4.5 Physical Consequence Table

The principal physical implications of the two frameworks are summarized in Table 3.

Table 3: Physical Implications of F–HUB and ToE

Phenomenon	F–HUB Interpretation	ToE Interpretation
Mass	Emerges from informational resonance within the Higgs field.	Arises from frozen or constrained entropy—localized entropic resistance.
Gravity	Curvature of informational geometry mediated by Higgs potential.	Redistribution of entropy seeking maximal flow—curvature of the entropic field.
Light Speed	Constant linking energy, mass, and information transfer.	Maximum speed of entropic reconfiguration—the causal limit of reality.
Time	Sequential update of informational states.	Continuous irreversible entropy flow—Chronos as the dynamic of existence.
Energy Conservation	Result of information symmetry.	Result of global entropy equilibrium within the entropic manifold.
Causality	Determined by network connectivity.	Determined by finite entropic update rate (c).
Relativity Effects	Emergent from information–Higgs interactions.	Natural consequence of finite entropic processing capacity of the universe.
Quantum Behavior	Probability as statistical representation of informational uncertainty.	Probability as expression of finite-time entropic transitions (irreversibility).

4.6 On the Evolution of Physical Laws

A profound implication of the Theory of Entropicity (ToE) is that what we call "physical laws" are not immutable but adaptive states of the entropic field. The constants and equations of physics reflect the current configuration of entropy within the universe, which evolves as entropy itself evolves. Consequently, the laws of nature are not eternal but self-updating—a concept that F–HUB only implicitly hints at through informational restructuring. The evolution of physical law under ToE implies that cosmological and quantum parameters may slowly drift as the universe's entropic manifold reconfigures over cosmic timescales.

4.7 Summary

Both theories seek to unify physics by tracing mass, time, and gravitation back to deeper first principles, yet their causal hierarchies diverge. F–HUB's universe is a crystallized lattice of information shaped by Higgs interactions; ToE's universe is a living continuum of entropy in perpetual self-organization. Information in ToE is but a residue of entropy's memory—its "shadow" in stability.

Hence, F–HUB provides the static skeleton of reality; ToE provides its dynamic pulse. One describes the architecture of being, the other its becoming.

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5 The Entropic Cone and the Core Principles of ToE

In the Theory of Entropicity (ToE), Einstein's relativistic kinematics is not a starting axiom but a derived consequence of deeper entropic dynamics. These dynamics are encoded geometrically in what ToE calls the **Entropic Cone**—the entropic analogue of the relativistic light cone. The entropic cone is defined by the *Entropic Speed Limit (ESL)*, the maximum rate at which the entropic field can update, propagate, and redistribute information and energy. This ESL appears in conventional physics as the speed of light c, but in ToE it is understood as the field's own intrinsic "clock speed," set by the **Obidi Action (OA)** and the **Master Entropic Equation (MEE)**. [Refer to **the Appendix section** for further details.]

The entropic cone is governed by a family of interlocking principles: -

1. the **No–Rush Theorem (NRT)**,
2. the **Cumulative Delay Principle (CDP)**,
3. the **Entropic Accounting Principle (EAP)**,
4. the **Entropic Resistance Principle (ERP)** and its associated
5. **Entropic Resistance Field (ERF)**, and
6. the feedback cycle known as **Obidi's Loop (OL)**.

Together, these principles explain why nothing can outrun light, why all observers measure the same value of c, and why relativistic effects such as time dilation, mass increase, and length contraction emerge naturally.

5.1 The Entropic Cone.

The entropic cone is the causal domain of the entropic field. Events inside the cone can be connected by entropic influence; events outside it are causally disconnected, since no entropic signal can reach them within the finite update rate of the field. Thus, the entropic cone generalizes the relativistic light cone: it is not defined by photons, but by the universal tempo of entropic reconfiguration.

5.2 The No–Rush Theorem (NRT).

NRT asserts that no process can reorganize the entropic field faster than the ESL. Reality cannot "rush" its own update schedule: the field cannot compute or recalibrate faster than its intrinsic causal tempo. This replaces Einstein's postulate of invariant light speed with a deeper requirement: all motion and interaction are bounded by the finite rate of entropy redistribution.

5.3 The Cumulative Delay Principle (CDP).

Each entropic interaction requires a finite processing interval. When many such interactions occur, these microscopic delays accumulate. Relativistic *time dilation* is the macroscopic manifestation of this accumulation: the more a system draws on the entropic field to sustain motion and coherence, the more its proper time lags. CDP thus links microscopic entropic finiteness to macroscopic relativistic effects.

5.4 The Entropic Accounting Principle (EAP).

Every system has a finite *entropic budget*, allocated among: (i) maintaining internal identity, (ii) sustaining motion, and (iii) mediating interactions. At high velocities, more of this budget is diverted to preserving global consistency with the field, leaving less for internal change. This reallocation manifests externally as increased inertial mass and internally as slowed proper time. EAP is the bookkeeping rule of ToE.

5.5 The Entropic Resistance Principle (ERP) and Entropic Resistance Field (ERF).

ERP states that attempts to approach the ESL are met with increasing resistance from the entropic field. The ERF quantifies this resistance, ensuring causal consistency. In Einstein's language, this is relativistic mass increase; in ToE, it is the entropic necessity of diverting resources to oppose any attempt to outrun the field's update rate.

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5.6 Obidi's Loop (OL).

OL describes the feedback cycle that enforces the ESL. As velocity nears the ESL, resistance intensifies (ERP/ERF), forcing additional energy into entropic load rather than speed. This slows the system's ability to change state, which further strengthens resistance, closing the loop. The result is an asymptotic approach to the ESL: one can approach the cone's boundary but never cross it, unless the local entropic field itself is reconfigured. ***This self-reinforcing cycle is known in the Theory of Entropicity (ToE) as Obidi's Loop: the harder a system strives to advance, the more that very effort is absorbed into resistance, until progress itself becomes imperceptible, unmeasurable, and ultimately unattainable.***

5.7 Einstein's Kinematics as Entropic Geometry.

When combined—NRT, CDP, EAP, ERP/ERF, and OL—Einstein's relativistic kinematics emerges naturally. Time dilation arises from CDP; length contraction from the field's rescaling to preserve ESL; mass increase from ERP under EAP's budget; and invariance of c from the invariance of the entropic field's causal tempo. Thus, relativity is not axiomatic but derivative: the light cone is a projection of the deeper entropic cone.

5.8 Generalization and Local Variability.

ToE allows that in regions where the entropic field has a different internal clock speed or symmetry, the slope of the entropic cone changes. The ESL—and thus the effective "speed of light"—may differ. The principles remain valid locally, but with new constants and new kinematics. Hence, the entropic cone unifies relativity's local invariance with the possibility of global variability: laws of physics are emergent field behaviors, not immutable decrees.

5.9 Summary on the Core Concepts of ToE.

The entropic cone and its governing principles show that ToE does more than reinterpret Einstein's postulates: it derives them. Relativity becomes the visible surface of a deeper entropic architecture, grounded in the axioms of entropy as a field, the Obidi Action, and the Master Entropic Equation.

6 Integration of Information and Geometry in the Theory of Entropicity (ToE)

6.1 Historical and Conceptual Foundations

Long before the emergence of the Theory of Entropicity, pioneers such as Claude Shannon and John von Neumann had already revealed a profound connection between information and entropy. Shannon's information entropy, $H = -\sum_i p_i \log p_i$, and von Neumann's quantum entropy, $S = -k_B \mathrm{Tr}(\rho \log \rho)$, both express the uncertainty or informational content of a system as a thermodynamic measure. ToE extends these insights beyond statistics: entropy is not merely a measure of uncertainty but the very *field* through which information and geometry arise.

In ToE, information is an emergent structure—the spatial–temporal imprint of stabilized entropy flow. Geometry, in turn, is the metric representation of the entropic field's curvature. Thus, information theory, thermodynamics, and spacetime geometry are not independent domains but nested projections of a single underlying entity: the entropic continuum.

6.2 Mathematical Synthesis of Information and Geometry

ToE integrates the mathematical machinery of **information geometry**—the Amari–Čencov α-connections, the Fisher–Rao metric, and the Fubini–Study metric—directly into its field equations. In standard information geometry, the Fisher–Rao metric defines the infinitesimal distance between probability distributions:[(4; 5)]

$$ds^2 = g_{ij}\, d\theta^i d\theta^j, \quad g_{ij} = \mathbb{E}\left[\frac{\partial \ln p}{\partial \theta^i}\frac{\partial \ln p}{\partial \theta^j}\right]. \tag{8}$$

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In ToE, this metric becomes the local geometry of entropy gradients:

$$g_{\mu\nu}^{(\mathrm{ToE})} = \frac{\partial_\mu S\, \partial_\nu S}{(\nabla S)^2}, \tag{9}$$

so that the curvature of spacetime directly measures the change in entropy flow. The Amari–Čencov α-connections then represent dual perspectives of the same entropic manifold—one reversible, one irreversible—mirroring the reversible and dissipative components of the Vuli-Ndlela Integral.

This formalism transforms information geometry from a descriptive tool into a physical geometry: probability space and spacetime share the same entropic curvature. Einstein's tensor $G_{\mu\nu}$ becomes, in ToE, an emergent limit of this deeper metric of entropy gradients.

6.3 Relation to the Higgs Mechanism and F–HUB Integration

The FELDT–HIGGS Universal Bridge (F–HUB) identifies the Higgs field as the information mediator that endows matter with mass. ToE subsumes this description by reinterpreting the Higgs potential as a local stabilization term in the entropic field equation:[(1)]

$$V_{\mathrm{Higgs}}(\phi) = \lambda\,(\phi^2 - v^2)^2 \quad \longrightarrow \quad V_{\mathrm{Entropic}}(S) = \lambda_e\,(S - S_0)^2, \tag{10}$$

where S_0 is the equilibrium entropy density and λ_e the entropic coupling constant. This mapping shows that what the Higgs field achieves through spontaneous symmetry breaking, the entropic field achieves through gradient stabilization: mass generation arises when entropy ceases to flow freely and condenses into localized curvature.

Hence, ToE naturally reproduces the role of the Higgs field but within a more general variational structure. The Higgs potential becomes a specific case of the entropic potential $V(S)$, and the FELDT–HIGGS formalism emerges as a low-energy informational limit of the entropic field equations. Symbolically:

$$\text{Higgs Field} \subset \text{Entropy Field}, \qquad \text{F–HUB} \subset \text{ToE}.$$

6.4 Entropy as the Unifying Bridge

In this unified picture, entropy acts as the bridge between information and geometry. The three great mathematical languages of physics—thermodynamics, information theory, and differential geometry—become facets of a single entropic manifold:

- The **thermodynamic face** expresses entropy as energy dispersion.
- The **informational face** expresses entropy as uncertainty or knowledge.
- The **geometric face** expresses entropy as curvature and motion.

ToE merges these faces through the Obidi Action, ensuring that every change in information or geometry corresponds to a proportional change in entropy flow. In this framework, energy conservation, information exchange, and spacetime curvature are unified through the same entropic principle.

6.5 Consequences and Breadth of ToE

The integration of information and geometry gives ToE immense reach and explanatory power:

1. It connects the probabilistic foundations of quantum mechanics to the curvature of spacetime via entropy gradients.
2. It generalizes the Higgs mechanism and subsumes the F–HUB model as a special informational-equilibrium limit.
3. It provides a natural bridge between Fisher–Rao information metrics and the Einstein–Hilbert action, showing that geometry itself encodes information about entropy flow.
4. It redefines the speed of light c as the upper bound of entropic reconfiguration, linking relativity directly to information-theoretic constraints.

In summary, ToE extends the work of Shannon, von Neumann, Fisher, Amari, and Higgs into a single continuum. Entropy is the field; information is its memory; geometry is its expression. Through this synthesis, the Theory of Entropicity achieves what earlier frameworks only hinted at: a complete correspondence between information, thermodynamics, and spacetime—a unified language of reality.

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6.6 Non-Extensive Entropies in ToE: Rényi and Tsallis Embedded Frameworks

The Theory of Entropicity incorporates the generalized entropies of R´enyi and Tsallis as natural extensions of the local entropic field geometry. Where Boltzmann–Gibbs entropy applies to additive and uncorrelated systems, R´enyi and Tsallis entropies capture the non-linear, correlated, and long-range dynamics inherent in gravitational and quantum domains.[(4; 5)]

In ToE, the parameters α (R´enyi) and q (Tsallis) are not phenomenological indices but geometric invariants describing the local curvature of the entropic manifold. The limit $\alpha, q \to 1$ corresponds to the Shannon equilibrium state, while deviations from unity represent field deformation—regions where entropy flow is non-extensive or self-organizing.

This embedding allows ToE to unify statistical, thermodynamic, and geometric entropies within a single variational structure, revealing that:

- Boltzmann–Gibbs entropy describes equilibrium systems;
- R´enyi entropy describes multi-scalar or fractal information flow;
- Tsallis entropy describes power-law distributed, non-equilibrium systems.

Hence, the ToE field equations implicitly encompass all known forms of entropy, not as separate models but as regimes of one universal entropic law.

7 Conclusion and Unified Perspective

7.1 Entropy and Information: The Two Faces of Reality

This comparative analysis reveals that the **FELDT–HIGGS Universal Bridge (F–HUB)** and the **Theory of Entropicity (ToE)** share a common ambition—to explain spacetime, mass, and energy as emergent from deeper informational and thermodynamic laws. Yet they diverge in what they identify as the ultimate foundation of nature.

In F–HUB, the universe originates from a *structured informational lattice* modulated by the Higgs field. Information crystallizes into mass, and mass shapes gravity through informational curvature. The framework is elegant, symmetrical, and computational in spirit. However, its formalism is static—its master equation describes relations that hold once reality is formed.

In contrast, the Theory of Entropicity reinterprets the universe as a *dynamic entropic continuum*. Information is not the cause of existence but its emergent record—entropy's residual imprint once flow stabilizes. The universe evolves because entropy flows, redistributes, and learns. Matter, energy, time, and light are the ways in which this entropic learning expresses itself.

7.2 The Hierarchy of Theories

Through mathematical and conceptual comparison, we may now establish a natural hierarchy:

$$\text{F–HUB} \subset \text{ToE}$$

That is, the FELDT–HIGGS framework can be recovered as the *equilibrium limit* of the Theory of Entropicity. When entropy ceases to evolve and becomes static, the entropic field $S(x)$ behaves as information geometry. At that boundary, the informational domain of F–HUB emerges as the stationary state of the entropic continuum—an informational shadow of entropy in equilibrium.

In ToE, information is frozen entropy, and F–HUB describes its crystallized geometry.

7.3 Evolution of Physical Law and the Living Universe

A remarkable implication of ToE is that the laws of physics themselves evolve as the universe's entropic configuration changes. Constants such as G, $\hbar$, and c represent stable ratios of entropic flow within the current cosmic phase, not eternal quantities. As entropy saturates or reorganizes on cosmological scales, the values of these constants may subtly drift, signaling a universe that is not fixed but alive—a self-reconfiguring computational organism whose memory is written in entropy.

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F–HUB approaches a similar intuition indirectly, interpreting the universe as a self-correcting information processor mediated by the Higgs field. However, only ToE provides the mechanism: entropy is the computation, and spacetime is its screen.

7.4 Philosophical and Experimental Outlook

The philosophical ramifications are profound. Both theories replace static geometry with dynamic becoming. The difference lies in emphasis:

- F–HUB celebrates **informational structure**—the architecture of cosmic memory.
- ToE celebrates **entropic process**—the generative rhythm of existence.

They are not mutually exclusive but sequential: F–HUB describes the informational residue of the entropic unfolding that ToE models.

Experimentally, the most promising avenues for testing ToE's predictions include:

1. Ultrafast entanglement experiments probing attosecond-scale delays consistent with entropic time formation.
2. Observational cosmology tracking slow drifts in gravitational and fine-structure constants as signatures of evolving entropy fields.
3. High-precision interferometry measuring deviations from static spacetime curvature predicted by the entropic coupling tensor $\Lambda_{\mu\nu}$.

7.5 Toward an Entropic–Informational Unification

The convergence of ToE and F–HUB suggests that entropy and information are dual aspects of one reality: the active and the archival. Entropy acts, information remembers. When entropy flows, the universe changes; when entropy rests, the universe knows. The grand synthesis therefore reads:

Reality = Information as remembered Entropy.

7.6 Final Reflection

The unification of physics may not come from choosing between entropy and information, but from realizing that they are phases of the same cosmic process. The Theory of Entropicity provides the dynamics, F–HUB provides the structure, and together they form a more complete ontology of existence. Future physics will likely build on this bridge, merging thermodynamics, information geometry, and field theory into a single narrative—a universe that is both learning and being.

Entropy creates, information preserves, and the universe evolves through their eternal dialogue.

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This paper was not written in isolation; it emerged, as all entropy does, through interaction and exchange. Across conversations, messages, and moments of reflection shared with colleagues and readers worldwide, the ideas of the **Theory of Entropicity (ToE)** have grown—refined, challenged, and strengthened.

I am equally indebted to the wider community of thinkers and dreamers exploring informational physics, among them the originator and developer of the **FELDT–HIGGS Universal Bridge (F–HUB)** Theory, **Waldemar Marek Feldt**, and contributors to related frameworks. Your works, especially those of **Waldemar Marek Feldt**, have inspired this comparative journey, reminding me that understanding is not owned—it evolves collectively, like entropy itself.

May the dialogue between entropy and information continue to expand beyond this page, binding minds not through agreement but through curiosity— and reminding us that every shared idea is itself an entropic bridge across the universe of thought.

Medasi! Avosokokoroko!

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Appendix

A Appendix: Clarifications on the Hierarchy of Manifestation in the Theory of Entropicity (ToE)

To prevent possible misinterpretations concerning how the Theory of Entropicity (ToE) treats the relationship between entropy, information, and mass, this appendix section elaborates on the hierarchical nature of entropic manifestation. The apparent overlap between statements such as "mass is frozen entropy" and "information is frozen entropy" is not a contradiction but rather an illustration of entropy's multi-level expression under different conditions of constraint. This clarification expands the theoretical logic underlying Sections 1–7 of the paper.

A.1 The Entropic Hierarchy of Manifestation

In ToE, entropy is the only truly causal and fundamental field. Every other physical or informational phenomenon represents a particular state or phase of that field under varying degrees of freedom or constraint. The theory organizes reality into a hierarchy of entropic manifestation as summarized in Table 4.

Table 4: Hierarchy of Entropic Manifestations in ToE

Entropic State	Condition	Manifestation in Nature
Dynamic / Free Entropy	Maximum flow, minimal constraint.	Generates motion, radiation, thermal diffusion, and the irreversible progression of time (Chronos, Pyros).
Partially Constrained Entropy	Local equilibrium where entropy stabilizes without freezing.	Appears as **information**—the structured record or geometry of entropy's past state.
Fully Constrained Entropy	Complete local arrest of entropic flow, often by curvature or confinement.	Appears as **mass**—the densest form of frozen entropy, embodying gravitational resistance.
Irreversible Entropic Flow	Continuous reconfiguration across scales.	Governs energy exchange, causality, and the evolution of physical law.

Thus, mass and information are both "frozen" states of entropy, but at distinct levels of entropic arrest:

- **Mass = Gravitationally Trapped Entropy:** The point where entropy flow halts spatially, producing local curvature and resistance to motion.
- **Information = Geometrically Stabilized Entropy:** The state where entropy ceases to change temporally, creating structure and pattern without ceasing to exist.

Both phenomena emerge when entropy's inherent drive to flow is locally constrained. The difference lies in the dimension of constraint: mass freezes spatially; information freezes temporally.

A.2 Reconciling the Language

Earlier discussions identified mass as frozen entropy and gravity as entropy attempting to restore flow. This applies to the physical–material level of ToE, where entropy directly generates curvature and matter. Later statements identified information as frozen entropy, which applies to the structural–informational level, where the stabilization of entropy manifests as geometric or informational order.

The reconciliation follows a nested sequence:

$$\text{Entropy} \longrightarrow \text{Information (frozen in time)} \longrightarrow \text{Mass (frozen in space)}.$$

Hence, information represents a gentler arrest of entropy's dynamics, while mass represents the complete arrest of its flow. The same universal field gives rise to both, depending on the scale and depth of entropic constraint.

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A.3 Unified Interpretation: Entropy as Source, Information as Memory

In this light, entropy may be seen as the universe's *active cause*, while information is its *memory*. When entropy flows, reality evolves; when it stabilizes, the universe records. Information is therefore the geometry of entropy's past—a frozen pattern of entropic motion preserved across time. Mass, in turn, is that geometry's densest crystallization, where energy and curvature merge.

This insight reframes physical ontology:

- **Information = Entropy's Memory.**
- **Mass = Entropy's Body.**
- **Energy = Entropy's Motion.**
- **Time = Entropy's Rhythm.**

Together, these define the four fundamental expressions of the entropic field.

A.4 Philosophical and Theoretical Consequences

Understanding this hierarchy resolves the apparent contradiction and enhances the explanatory power of ToE:

1. It shows that all observable phenomena—mass, charge, spin, and information—are not distinct substances but different boundary conditions of a single entropic field.
2. It establishes that F–HUB, operating at the informational equilibrium level, describes the geometry of entropy's structural memory, while ToE extends this framework to include the dynamical processes by which such geometry arises.
3. It grounds physical constants (c, G, $\hbar$) as ratios of entropic flow between these levels of manifestation, explaining their universality and stability.
4. It unifies the philosophical duality between form and process: ToE posits that entropy is both—the process that generates, and the form that records, existence.

In summary: Entropy acts, information remembers, mass endures. These are not separate realities but consecutive states of the same universal field—the entropic field that governs all physical law.

B Appendix: Glossary of Core Axioms, Acronyms, and Principles in the Theory of Entropicity (ToE)

B.1 Foundational Axioms

- **ToE (Theory of Entropicity)** — A unified framework treating entropy as a fundamental, dynamic field that underpins all physical reality.
- **OA (Obidi Action)** — The variational principle governing the dynamics of the entropy field, analogous to the Principle of Least Action.
- **MEE (Master Entropic Equation)** — The central dynamical equation derived from the Obidi Action, encoding the evolution of the entropic field.
- **ESL (Entropic Speed Limit)** — The maximum rate at which the entropic field can reconfigure itself; observed in physics as the speed of light c.
- **OL (Obidi's Loop)** — The feedback cycle that enforces the ESL by diverting energy into entropic resistance rather than further acceleration.

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B.2 Core Principles and Theorems

- **Entropic Cone** — The causal domain of the entropic field, analogous to the relativistic light cone, bounded by the ESL.
- **NRT (No–Rush Theorem)** — No process can reorganize the entropic field faster than the ESL; reality cannot "rush" its own update schedule.
- **CDP (Cumulative Delay Principle)** — Microscopic entropic delays accumulate, manifesting macroscopically as relativistic time dilation.
- **EAP (Entropic Accounting Principle)** — Every system has a finite entropic budget, allocated among internal stability, motion, and interactions.
- **ERP (Entropic Resistance Principle)** — Attempts to approach the ESL are met with increasing resistance from the entropic field.
- **ERF (Entropic Resistance Field)** — The field manifestation of ERP, quantifying the resistance that enforces causal consistency.

B.3 Derived Structures and Equations

- **EG (Entropic Geodesics)** — Natural paths of evolution in the entropic manifold, generalizing geodesics in relativity.
- **EPE (Entropy Potential Equation)** — Governs the potential landscape of entropic interactions.
- **ESL Variability** — In regions with different entropic configurations, the ESL (and thus the effective "speed of light") may differ, yielding new local kinematics.

B.4 Conceptual Analogies

- **Ocean Analogy** — The entropic field is the ocean; objects are fish; light is the intrinsic wave speed. Fish can swim faster than currents, but nothing can outrun the wave speed of the ocean itself.
- **Clock Analogy** — Clocks and rulers are built from the entropic field; when motion changes, the field recalibrates them to preserve the ESL.

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